

UNITED STATES PATENT APPLICATION

FOR:

**DISPLAY ASSEMBLY WITH IMPROVED DISPLAY OBJECT
VISIBILITY**

INVENTED BY:

ROBERT JOSEPH ANGEN AND

JOHN GARRETT PENN II

DISPLAY ASSEMBLY WITH IMPROVED DISPLAY OBJECT VISIBILITY

Field of the Invention

5 The present invention relates to the field of display assemblies for use in displaying objects, such as collectibles, models, or other display objects.

Background of the Invention

Many systems exist for displaying collectibles, models (e.g., cars, buildings, guns, dolls, etc.) and other display objects. Such systems typically involve an enclosed case or open wood
10 shelving. These systems typically only permit the viewer to see the display object from one angle and preclude the viewer from viewing a portion of the object (i.e., the portion facing the display case or resting on the wood shelving. Additionally, existing display systems typically do not permit a user to remove the display system from the wall or other place of attachment for multi-directional viewing.

15 Other drawbacks and disadvantages exist for existing display systems.

Summary of the Invention

According to an embodiment of the present invention, a display system is provided that comprises a shelf assembly and one or more mounting assemblies for removeably mounting the shelf assembly to a wall. One or more display object mounting assemblies removably and
20 rotatably mount a display object to a first side of the shelf assembly, such that the display object may be rotated about an axis for display purposes and may be removed from the shelf assembly. The shelf assembly may be transparent (e.g., a clear plastic, glass, fiberglass, etc.) or otherwise formed such that it enables a person to view at least a majority of the display object from the

second side of the shelf assembly. Opaque, translucent and other forms of shelf assemblies are also possible within the scope of the invention. The shelf assembly may be mounted at an angle with respect to a wall, parallel, perpendicular, upside down or otherwise. A retrofit bracket connects to existing packaging attachment mechanisms on the display objects as part of the display object mounting mechanism. The retrofit bracket may also be transparent (e.g., clear plastic, glass, fiberglass, etc.).

One advantageous use of this system involves the display of model cars. Although an example of model cars is described throughout this specification, it should be appreciated that the embodiments of the invention are not limited to display of model cars and this same display system may be used for displaying virtually any physical object that is attachable to the shelving system including, but not limited to, dolls, toys, guns, golf balls, trophies, plaques, glassware, plates, etc.

Model cars are typically shipped in a cardboard package with foam or other structures to limit movement during shipping. The model cars are often secured to the outer cardboard box through the use of one or more packaging attachment mechanisms (e.g., bolts or screws) to limit movement during shipping. Different model car manufacturers have different packaging attachment mechanisms and locations. Thus, a plurality of different retrofit brackets may be provided, each retrofit bracket designed to cooperate with a different model car for securement of the car to the bracket using the existing manufacturer's packaging attachment mechanisms. By utilizing the existing manufacturer's packaging attachment mechanisms, a hole or gluing or other structurally damaging alteration to the model is not required for securing the model to the shelving assembly. Given the cost of some model cars, this advantage is significant over

existing systems because any hole, etc. immediately degrades the value of the model as a collectible.

Other advantages will be appreciated by one of ordinary skill in the art upon review of the entirety of this patent application.

5 **Brief Description of the Drawings**

Fig. 1 depicts a side, angled view of a display system with display objects mounted thereon according to an embodiment of the present invention.

Fig. 2 depicts a side, angled view of a retrofit assembly secured to a display object according to an embodiment of the present invention.

10 Fig. 3 depicts a top, angled view of an acute-angle display system according to an embodiment of the present invention.

Fig. 4 depicts an exploded side view of a mounting assembly for an acute-angled display system according to an embodiment of the present invention.

15 Fig. 5 depicts a front view of a wall mount mechanism according to an embodiment of the present invention.

Fig. 6 depicts a side view of a wall mount mechanism according to an embodiment of the present invention.

Fig. 7 depicts a top, angled view of a shelf mount assembly according to an embodiment of the present invention.

20 Fig. 8 depicts a side view of a shelf mount assembly according to an embodiment of the present invention.

Fig. 9 depicts a back view of a shelf mount assembly according to an embodiment of the present invention.

Fig. 10 depicts a side view of a mounting assembly according to an embodiment of the present invention.

5 Fig. 11 depicts a side, angled view of a vertically arranged shelving assembly according to an embodiment of the present invention.

Fig. 12 depicts an exploded side view of a mounting assembly for a vertically arranged shelving assembly according to an embodiment of the present invention.

10 Fig. 13a depicts a front view of a wall mount according to an embodiment of the present invention.

Fig. 13b depicts a side view of a wall mount according to an embodiment of the present invention.

Fig. 14 depicts a side view of a mounting assembly according to an embodiment of the present invention.

15

Detailed Description of Embodiments

As discussed above, various embodiments and iterations of the present invention relate to a display assembly as depicted in various embodiments in the figures and described herein. A display system 10 may comprise a shelving assembly 12 secured to a wall by one or more mounting assemblies 14. In addition, a plurality of retrofit brackets 16 may be provided that secure to the display objects 17 (e.g., model cars, collectibles, etc.). Retrofit brackets 16 may

20

secure the display objects to shelving assembly 12 via a retrofit/shelf attachment mechanism 18 (e.g., screw, bolt or the like) through opening 20 in shelving assembly 12.

In one embodiment, shelving assembly 12 may comprise clear plastic, glass, fiberglass or some other material that enables a user to view the bottom of the display object 17. Because the display object is not covered and the shelving and retrofit brackets may be formed of transparent material, the viewer is able to view the majority of the display object 17.

As shown in Fig. 1, shelving assembly 12 may be formed with four openings 20 although any number of such openings may be provided to mount different numbers of display objects. In the embodiment of Fig. 1, shelving assembly 12 may be disposed at a 45 degree angle with respect to the wall, although other angles may also be used, as described and shown below.

One embodiment of a retrofit bracket 16 is depicted in Fig. 2. Such a retrofit bracket may comprise openings to receive retrofit/model attachment mechanisms 22, which may comprise the packaging attachment mechanisms sold with a model car, in one illustrative example. Other mechanisms 22 may also be used, including bolts, screws, and the like. A retrofit/shelf attachment mechanism 18 may be disposed in another opening in retrofit bracket 16 for connection of the retrofit bracket 16 to shelving assembly 12. Because different display objects may have different shapes and connection points, the shape of retrofit bracket may vary. Preferably, retrofit bracket 16 provides a retrofit-shelf attachment mechanism 18 that enables the display object to be rotatably and removably mounted to shelving assembly 12.

Figs. 3 and 4 depict a shelving assembly 12, shelf mount assembly 24 and wall mount assembly 26 for mounting shelving assembly 12 at an acute angle (e.g., 45 degrees) with respect to the wall. Shelf mount assembly 24 may be connected to shelving assembly 12 via a

shelf/shelf mount attachment mechanism 28 (e.g., bolt, screw or the like). Shelving assembly 12 and shelf mount assembly 24 may then be removably connected to wall mount assembly 26 through shelf mount/wall mount attachment mechanism 42 (e.g., bolt, screw or the like) that slides into the slotting mechanism (described and shown below) in wall mount assembly 26.

5 Although Figs. 4-6 depict an embodiment of wall mount assembly 26 in greater detail as one example of a mechanism for enabling shelving assembly 12 to be removably connected to wall mount assembly 26, it should be understood that other mechanism may also be used within the scope of this invention.

Fig. 5 depicts wall mount assembly as comprising two holes 30 through which wall/wall
10 mount attachment mechanisms 40 may operate to connect wall mount assembly 26 to a wall or other surface (e.g., ceiling, furniture, door, etc.). Fig. 5 also depicts an outer slot 32 and an inner slot 34 such that shelf mount/wall mount attachment mechanism 42 slides into the outer slot and the inner slot prevents horizontal movement of the mechanism 42 due to the outer head of mechanism 42.

15 Figs. 7-9 depict greater detail regarding shelf mount assembly 24, including a shelf/shelf mount opening 36 and a shelf mount/wall mount opening 38. Again, although one illustrative embodiment is provided, others may be used for providing a mount for shelving assembly 12 to mount to a wall.

Fig. 10 depicts illustrates one illustrative embodiment of connections between shelf
20 mount assembly 24 and wall mount assembly 26 through the use of wall/wall mount attachment mechanisms 40 to secure wall mount assembly 26 to the wall or other surface and shelf

mount/wall mount attachment mechanism 42 to connect shelf mount assembly 24 to wall mount assembly 26.

While an angled embodiment has been depicted herein it should be appreciated that shelf assembly may be disposed at any angle relative to a wall or surface as desired. Another

5 illustrative example embodiment is depicted in Figs. 11-14. In this example, a vertically arranged shelving assembly 112 is provided with vertical mount mounting assemblies 114 and a vertical shelf mount assembly 124. In this example, wall mount assembly 26 may be utilized. Vertical shelf mount assembly 124 may comprise two holes disposed therethrough, one for shelf/shelf mount attachment mechanism 28 and a second for shelf mount/wall mount attachment
10 mechanism 42.

In another embodiment, shelving assembly 12 may be mounted upside down with the display objects (e.g., model cars) hanging from shelving assembly 12. In this embodiment, mounting assembly 14 may comprise an extension from the wall to enable connection of shelving assembly upside down. Other arrangements may also be made to enable upside down
15 disposition of shelving assembly 12.

The size and materials used may vary within the scope of the present invention to suit the display objects being displayed. As discussed above, shelving assembly 12 and retrofit bracket 16 may comprise a clear plastic, glass or fiberglass. In addition, mounting assembly 14 may be formed from such materials, metals, wood, or other materials. The attachment mechanisms
20 described herein may be formed from metal, hard plastics, or other materials typically used for attachment mechanisms like bolts, screws, and the like.

In addition, it should be appreciated that various iterations, modifications, substitutions and alternations to the materials and structures described are possible. For example, the shelving material may be clear or opaque. The retrofit bracket may also be formed of a material that is not clear and thus could be made of various types and structures of metal, wood and/or plastics.

5 Metal wire retrofit brackets may used, for example. In using such a structure, it may be possible to provide a retrofit bracket that minimized the amount of the object being obscured.

The bolts used to attach the bracket to the shelf may be hand adjustable (wingnuts or the like). In addition, the bolts used to attach brackets to shelf may be hand adjustable as well.

While the foregoing description includes details and specificities, it should be understood
10 that such details and specificities have been included for the purposes of explanation only, and are not to be interpreted as limitations of the present invention. Many modifications to the embodiments described above can be made without departing from the spirit and scope of the invention, as it is intended to be encompassed by the following claims and their legal equivalents.

15